Virology

Volume 129

1983

EDITORS

W. K. Joklik, EDITOR-IN-CHIEF G. E. Bruening P. W. Choppin
R. Haselkorn D. W. Kingsbury A. J. Levine F. Rapp
M. D. Summers P. K. Vogt

ASSOCIATE EDITORS

S. Adhya
C. Baglioni
A. K. Banerjee
C. Basilico
K. L. Beemon
T. Ben-Porat
K. I. Berns
D. H. L. Bishop
J. M. Bishop
L. W. Black
M. A. Bratt
T. R. Broker
J. S. Brugge
B. J. Carter
J. M. Coffin
J. S. Colter
R. J. Courtney
S. Dales
J. M. Dalrymple
E. Ehrenfeld
R. Eisenman
F. A. Eiserling
M. K. Estes
A. J. Faras
P. Faulkner
B. N. Fields
S. J. Flint
W. R. Folk
R. I. B. Francki
E. P. Geiduschek
R. F. Gesteland
R. M. Goodman
A. Granoff
W. S. Hayward
M. S. Horwitz
M. M. Howe
R. Hull
T. Hunter
J. N. Ihle
A. O. Jackson
J. E. Johnson
J. M. Kaper
J. D. Keene
R. M. Krug
M. Lai
R. A. Lamb
R. A. Lazzarini
L. Levintow
D. M. Livingston
H. F. Lodish
R. B. Luftig
I. G. Miller, Jr.
L. K. Miller
R. C. Miller, Jr.
T. J. Morris
B. Moss
S. A. Moyer
F. A. Murphy
P. E. Neiman
J. R. Nevins
J. F. Obijeski
D. J. O'Callaghan
P. Palese
E. Paoletti
C. C. Payne
M. W. Pons
H. J. Raskas
H. D. Robertson
G. F. Rohrmann
B. Roizman
L. B. Rothman-Denes
J. Sambrook
C. E. Samuel
P. A. Schaffer
A. Scheid
M. J. Schlesinger
I. R. Schneider
E. M. Scolnick
J. R. Scott
P. B. Sehgal
P. A. Sharp
J. G. Shaw
T. Shenk
P. G. Spear
V. Stollar
B. Sugden
M. M. Susskind
R. H. Symons
P. Tattersall
P. Tegtmeyer
D. W. Trent
H. E. Varmus
I. M. Verma
E. K. Wagner
E. Wimmer
J. Youngner
M. Zaitlin
N. D. Zinder

ACADEMIC PRESS

A Subsidiary of Harcourt Brace Jovanovich, Publishers

New York London

Paris San Diego San Francisco São Paulo Sydney Tokyo Toronto

Copyright © 1983 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (21 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U. S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1983 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0042-6822/83 $3.00

MADE IN THE UNITED STATES OF AMERICA

Contents of Volume 129

NUMBER 1, AUGUST 1983

GIRISH J. KOTWAL, JOHN CAPONE, ROBERT A. IRVING, SUNG H. RHEE, PATRICIA BILAN, FRANCES TONEGUZZO, THEO HOFMANN, AND HARA P. GHOSH. Viral Membrane Glycoproteins: Comparison of the Amino Terminal Amino Acid Sequences of the Precursor and Mature Glycoproteins of Three Serotypes of Vesicular Stomatitis Virus ... 1

KARL H. BRACKMANN, MAURICE GREEN, WILLIAM S. M. WOLD, ANNE RANKIN, PAUL M. LOEWENSTEIN, MARIA A. CARTAS, PATRICIA R. SANDERS, KEN OLSON, GÉRARD ORTH, STEFANIA JABLONSKA, DINA KREMSDORF, AND MICHEL FAVRE. Introduction of Cloned Human Papillomavirus Genomes into Mouse Cells and Expression at the RNA Level ... 12

SUSAN L. ARMOUR, ULRICH MELCHER, THOMAS P. PIRONE, D. J. LYTTLE, AND R. C. ESSENBERG. Helper Component for Aphid Transmission Encoded by Region II of Cauliflower Mosaic Virus DNA ... 25

TADASHI YAMAMOTO, SADAAKI KAWAI, TAKUMI KOYAMA, HIROSHI HIHARA, TAKEHIKO SHIMIZU, AND KUMAO TOYOSHIMA. Newly Generated Avian Erythroblastosis Virus Produces Noninfectious Particles Lacking *env*-Gene Products ... 31

ABRAHAM PINTER AND WILLIAM J. HONNEN. Comparison of Structural Domains of gp70s of Ecotropic Akv and Dualtropic MCF-247 MuLVs ... 40

SYED Z. SALAHUDDIN, PHILLIP D. MARKHAM, FLOSSIE WONG-STAAL, GENOVEFFA FRANCHINI, V. S. KALYANARAMAN, AND ROBERT C. GALLO. Restricted Expression of Human T-Cell Leukemia–Lymphoma Virus (HTLV) in Transformed Human Umbilical Cord Blood Lymphocytes ... 51

M. G. MOSCOVICI, P. JURDIC, J. SAMARUT, L. GAZZOLO, C. V. MURA, AND C. MOSCOVICI. Characterization of the Hemopoietic Target Cells for the Avian Leukemia Virus E26 ... 65

WEN-HWA LEE, WILLIAM PHARES, AND PETER H. DUESBERG. Structural Relationship between the Chicken DNA Locus, Proto-*fps*, and the Transforming Gene of Fujinami Sarcoma Virus, Δ*gag-fps* ... 79

JOHN A. MERCER, JEFFREY R. MARKS, AND DEBORAH H. SPECTOR. Molecular Cloning and Restriction Endonuclease Mapping of the Murine Cytomegalovirus Genome (Smith Strain) ... 94

MARGO A. BRINTON AND ANNABELLEE V. FERNANDEZ. A Replication-Efficient Mutant of West Nile Virus Is Insensitive to DI Particle Interference ... 107

LESTER T. MAY, PRAVINKUMAR B. SEHGAL, K. STEVEN LAFORGE, AND MASAYORI INOUYE. Expression of the Native α and β Interferon Genes in Human Cells ... 116

LYNN M. LITTLE, GERTRUDE LANMAN, AND ALICE S. HUANG. Immunoprecipitating Human Antigens Associated with Vesicular Stomatitis Virus Grown in HeLa Cells ... 127

CONSTANCE L. CEPKO AND PHILLIP A. SHARP. Analysis of Ad5 Hexon and 100K ts Mutants Using Conformation-Specific Monoclonal Antibodies ... 137

DIANA WEINER AND WADE GIBSON. Phosphorylation, Maturational Processing, and Relatedness of Strain Colburn Matrix Proteins ... 155

LYNN DALGARNO, CHARLES M. RICE, AND JAMES H. STRAUSS. Ross River Virus 26 S RNA: Complete Nucleotide Sequence and Deduced Sequence of the Encoded Structural Proteins ... 170

RONALD GLASER, ANN BOYD, JAY STOERKER, AND JANE HOLLIDAY. Functional Mapping of the Epstein–Barr Virus Genome: Identification of Sites Coding for the Restricted Early Antigen, the Diffuse Early Antigen, and the Nuclear Antigen ... 188

JAY STOERKER, JANE E. HOLLIDAY, AND RONALD GLASER. Identification of a Region of the Epstein–Barr Virus (B95-8) Genome Required for Transformation ... 199

SHORT COMMUNICATIONS

J. W. ERICKSON, F. R. HALLETT, AND J. B. BANCROFT. Subassembly Aggregates of Papaya Mosaic Virus Protein ... 207

LEONARD H. EVANS AND WILLIAM J. BRITT. An Immunological Focus Assay for Murine Leukemia Viruses on Viable Attached Cell Lines ... 212

A. GWENDOLYN NOBLE, GLORIA T.-Y. LEE, ROBERT SPRAGUE, MARY LYNN PARISH, AND PATRICIA G. SPEAR. Anti-gD Monoclonal Antibodies Inhibit Cell Fusion Induced by Herpes Simplex Virus Type 1 ... 218

PRANAB K. CHANDA, JAYASRI ROY, AND AMIYA K. BANERJEE. *In Vitro* Synthesis of Genome Length Complementary RNA of Vesicular Stomatitis Virus in the Presence of Inosine 5′-Triphosphate ... 225

DIPAK KUMAR BANERJEE, KRISHNA BAKSI, AND MICHAEL M. GOTTESMAN. Genetic Evidence That Action of cAMP-Dependent Protein Kinase Is Not an Obligatory Step for Antiviral and Antiproliferative Effects of Human Interferon in Chinese Hamster Ovary Cells ... 230

KEVIN RYDER, ANGELO L. DELUCIA, AND PETER TEGTMEYER. Binding of SV40 A Protein to the BK Virus Origin of DNA Replication ... 239

AUTHOR INDEX FOR VOLUME 129, NUMBER 1 ... 246

JÜRG STALDER, FRANZ REIGEL, AND HANS KOBLET. Defective Viral RNAs in *Aedes Albopictus* C6/36 Cells Persistently Infected with Semliki Forest Virus ... 247

DOUWE ZUIDEMA, MARTI F. A. BIERHUIZEN, AND E. M. J. JASPARS. Removal of the N-Terminal Part of Alfalfa Mosaic Virus Coat Protein Interferes with the Specific Binding to RNA 1 and Genome Activation ... 255

S. K. KONDOLEON, G. W. ROBINSON, AND L. M. HALLICK. SV40 Virus Particles Lack a Psoralen-Accessible Origin and Contain an Altered Nucleoprotein Structure ... 261

JEAN M. DEMARCHI. Correlation between Stimulation of Host Cell DNA Synthesis by Human Cytomegalovirus and Lack of Expression of a Subset of Early Virus Genes ... 274

JEAN M. DEMARCHI. Nature of the Block in the Expression of Some Early Virus Genes in Cells Abortively Infected with Human Cytomegalovirus ... 287

CLAYTON W. NAEVE AND ROBERT G. WEBSTER. Sequence of the Hemagglutinin Gene from Influenza Virus A/Seal/Mass/1/80 ... 298

EUGENE V. KOONIN AND VADIM I. AGOL. Encephalomyocarditis Virus Replication Complexes That Prefer Nucleoside Diphosphates as Substrates for Viral RNA Synthesis ... 309

ROBERT F. GARRY, EMIN T. ULUG, AND HENRY R. BOSE, JR. Induction of Stress Proteins in Sindbis Virus- and Vesicular Stomatitis Virus-Infected Cells ... 319

SUSAN F. COTMORE, LAURIE J. STURZENBECKER, AND PETER TATTERSALL. The Autonomous Parvovirus MVM Encodes Two Nonstructural Proteins in Addition to Its Capsid Polypeptides ... 333

A. A. AGRANOVSKY, V. V. DOLJA, AND J. G. ATABEKOV. Differences in Polyadenylate Length between Individual Barley Stripe Mosaic Virus RNA Species ... 344

P. W. G. CHU AND R. I. B. FRANCKI. Chemical and Serological Comparison of the Coat Proteins of Velvet Tobacco Mottle and *Solanum nodiflorum* Mottle Viruses ... 350

TOSHIOMI OKUNO, KOICHI YAMANISHI, KIMIYASU SHIRAKI, AND MICHIAKI TAKAHASHI. Synthesis and Processing of Glycoproteins of Varicella-Zoster Virus (VZV) as Studied with Monoclonal Antibodies to VZV Antigens ... 357

JEAN C. KRIDL AND GEORGE BRUENING. Comparison of Capsids and Nucleocapsids from Cowpea Mosaic Virus-Infected Cowpea Protoplasts and Seedlings ... 369

JOHN S. BRUSCA AND G. CHINNADURAI. Structure and Reversion of an Adenovirus Type 2 Mutant Containing a Duplication of the Left End of the Genome at the Right End ... 381

J. L. BOS, A. G. JOCHEMSEN, R. BERNARDS, P. I. SCHRIER, H. VAN ORMONDT, AND A. J. VAN DER EB. Deletion Mutants of Region E1a of AD12 E1 Plasmids: Effect on Oncogenic Transformation ... 393

C. R. PARRISH AND L. E. CARMICHAEL. Antigenic Structure and Variation of Canine Parvovirus Type-2, Feline Panleukopenia Virus, and Mink Enteritis Virus ... 401

CHARLOTTE L. JONES AND ELLIE EHRENFELD. The Effect of Poliovirus Infection on the Translation *In Vitro* of VSV Messenger Ribonucleoprotein Particles ... 415

TH. MERTENS, URSULA PIKA, AND H. J. EGGERS. Cross Antigenicity among Enteroviruses as Revealed by Immunoblot Technique ... 431

LAURA KINGSFORD, LORI D. ISHIZAWA, AND DOUGLAS W. HILL. Biological Activities of Monoclonal Antibodies Reactive with Antigenic Sites Mapped on the G1 Glycoprotein of La Crosse Virus ... 443

DAVID T. ROWE, FRANK L. GRAHAM, AND PHILIP E. BRANTON. Intracellular Localization of Adenovirus Type 5 Tumor Antigens in Productively Infected Cells ... 456

SHORT COMMUNICATIONS

STEVE HABER, ALAN J. HOWARTH, AND ROBERT M. GOODMAN. Restriction Map and Southern Analysis of the Bean Golden Mosaic Virus Genome ... 469

ELSA B. DAMONTE, SUSANA E. MERSICH, AND CELIA E. COTO. Response of Cells Persistently Infected with Arenaviruses to Superinfection with Homotypic and Heterotypic Viruses ... 474

TATSUO MIYAMURA, KUNITO YOSHIIKE, AND KENNETH K. TAKEMOTO. High-Titer SV40 Replication in Human Fibroblast Cell Lines Derived from Patients with Wiskott-Aldrich Syndrome ... 479

DEBORAH A. SIEGELE, SUSAN FRACKMAN, JEAN SIPPY, TIMOTHY MOMANY, THOMAS MICHAEL HOWARD, KIT TILLY, COSTA GEORGOPOULOS, AND MICHAEL FEISS. The Head Genes of Bacteriophage 21 ... 484

GLENN BUBLEY, CLYDE CRUMPACKER, ERIK DE CLERCQ, AND LOWELL SCHNIPPER. Effects of (*E*)-5-(2-Bromovinyl)-2′-deoxyuridine on the Proliferation of Herpes Simplex Virus Type 1-Transformed and Thymidine Kinase-Deficient Mouse Cells ... 490

JONATHAN H. MORGAN AND RALPH E. SMITH. Rapid Induction of Osteopetrosis by Subgroup E Recombinant Viruses ... 493

AVRI BEN-ZE'EV, RIVKA ABULAFIA, AND SUSAN BRATOSIN. Herpes Simplex Virus and Protein Transport Are Associated with the Cytoskeletal Framework and the Nuclear Matrix in Infected BSC-1 Cells ... 501
EDWARD A. HAVELL AND GEORGE L. SPITALNY. Two Molecular Weight Species of Murine Gamma Interferon ... 508
L. B. CRITTENDEN, S. M. ASTRIN, AND E. J. SMITH. Independent Segregation of *ev* 10 and *ev* 11, Genetic Loci for Spontaneous Production of Endogenous Avian Retroviruses ... 514
J. P. MOOSIC, D. J. MCKEAN, D. S. SHIH, AND P. KAESBERG. Primary Structure of Brome Mosaic Virus Coat Protein ... 517
C. SCHOLTISSEK, H. BÜRGER, P. A. BACHMANN, AND C. HANNOUN. Genetic Relatedness of Hemagglutinins of the H1 Subtype of Influenza A Viruses Isolated from Swine and Birds ... 521
YUKIHIRO NISHIYAMA, TATSUYA TSURUMI, HIIZU AOKI, AND KOICHIRO MAENO. Identification of DNA Polymerase(s) Involved in the Repair of Viral and Cellular DNA in Herpes Simplex Virus Type 2-Infected Cells ... 524
JUNJI TSUZUKI AND RONALD B. LUFTIG. The Adenovirus Type 5 Capsid Protein IIIa Is Phosphorylated during an Early Stage of Infection of HeLa Cells ... 529
AUTHOR INDEX FOR VOLUME 129 ... 534
SUBJECT INDEX FOR VOLUME 129 ... 536

NOTICE TO AUTHORS

Editorial Policy. *Virology* will publish articles on the biological, biochemical, genetic, and biophysical aspects of virus research. All manuscripts should meet the following four basic criteria. *First*, they should report *original* research results. Manuscripts are accepted for review on the understanding that the same or similar work, wholly or in part, has not been and will not be submitted for publication elsewhere. *Second*, they should report research that is *fundamental*, rather than applied. *Third*, they should report research that is *pioneering* in nature. Authors should clearly understand that space limitations may make it impossible to publish manuscripts that describe work that was performed competently but that does not break new conceptual ground; papers that describe results that have already been obtained with closely related virus or cell systems may be accepted only in exceptional circumstances. *Fourth*, they should be written as concisely as possible, their length being the minimum compatible with a clear presentation and interpretation of the experimental data. Repetition, such as between the Materials and Methods section and figure legends, should be carefully avoided. The Introduction should contain only material relevant to the research that is described; and the Discussion, which should exceed two pages only in exceptional circumstances, should be constructively interpretative and not merely restate the experimental results. Good writing requires careful examination that every word, phrase, and sentence is essential and arranged in logical sequence.

Manuscripts are accepted for review on the understanding that all persons listed as authors have given their approval for the submission of the paper; that any person cited as a source of personal communications has approved such citations; that locally and nationally prescribed safety regulations governing exposure of laboratory personnel and contamination of the environment have been observed; and that all variant virus and cell strains described or mentioned in the paper will be freely available for distribution upon request to all qualified members of the scientific community. Written verification of these conditions may be required at the Editors' discretion. Articles and any other material published in *Virology* represent the opinions of the author(s) and should not be construed as reflecting the opinions of the Editors and the Publisher.

Manuscripts should be submitted in duplicate to the editorial office of *Virology*, Seventh Floor, 1250 Sixth Avenue, San Diego, California 92101, by first class mail in flat form.

Authors submitting a manuscript do so on the understanding that if it is accepted for publication, copyright in the article, including the right to reproduce the article in all forms and media, shall be assigned exclusively to the Publisher. The Publisher will not refuse any reasonable request by the author for permission to reproduce any of his or her contributions to the journal.

Form of Manuscript. Manuscripts should be typewritten (not mimeographed), with wide margins on high quality bond paper, using double or triple spacing throughout. Subdivision of articles into *Abstract, Introduction, Materials and Methods, Results, Discussion, Acknowledgments*, and *References* is recommended. The manuscript must begin with an *Abstract*. In the Methods section, authors should draw attention to any particular chemical or biological hazards that may be involved in carrying out the experiment described. Any relevant safety precautions should be described; if an accepted code of practice has been followed, a reference to the relevant standards should be given. Reviews of the literature should be restricted to closely pertinent papers. Tables, figures, names, quotations, and bibliography (and all text references to the same) should be carefully checked for errors. A proposed running head of no more than 37 characters should be included.

Figures and Tables. Number all figures consecutively with Arabic numbers and give each one a descriptive legend. All illustrations should be in finished form for the photoengraver. Figures should be planned to fit the proportion of the printed page (5½″ × 8″, column width: 2½″). Lettering on drawings should be made with a lettering set and should be large enough to take a reduction of 50–60 percent. Drawings should be made with India ink on tracing linen, smooth surface white paper, or Bristol board. Graph paper, if used, should be ruled in blue.

Photographs should be glossy prints with strong contrasts, and the magnification should be indicated by a scale. Photographs should be cropped to eliminate background material so that reproduction might be possible without reduction. Grouping of photographs should be indicated.

Tables should be typed on separate pages, numbered consecutively with Arabic numbers, and collected at the end of the manuscript. All tables must have descriptive headings and should be understandable without reference to the text.

References. Names of authors should be mentioned in the text with the year of publication in brackets. References should be listed alphabetically at the end of the paper as follows: Bawden, F. C., and Kassanis, B. (1954). Some effects of thiouracil on virus-infected plants. *J. Gen. Microbiol.* **10,** 160–173. **See, however, the instructions** for *Short Communications* **below.** The names of journals should be abbreviated according to the *Chemical Abstracts Service Source Index*, 1980. References to books should include: author's name, year of publication, title of book (editor of book, if any), edition (if other than first), publisher, and place of publication.

Include in the reference list articles that are "in press," but incorporate in text or use footnotes for "manuscript in preparation," "unpublished observations," and "personal communication."

Abbreviations and Symbols. Where abbreviations are employed the author is asked to follow the usage established by *Chemical Abstracts Service Source Index*, 1980.

Nomenclature of Microorganisms. Binomial Latin names, with authorities, should be used in accordance with the International Rules of Nomenclature. Binomials should be underlined in the typewritten copy. A specific name should not be used without an accompanying capitalized generic name. The generic name for each species should be written in full where it first occurs in the text and again in the summary. Where the generic name appears frequently in the text it may be abbreviated by using the initial letter.

Short Communications. This section is open to short preliminary reports of important findings. They should not exceed six double-spaced typewritten pages including tables and illustrations. Do not use any section headings. All short communications must have abstracts. Illustrative material should be kept to a minimum (usually not more than one table or figure). Literature should be cited as follows: References should be given serial numbers in the text and listed consecutively at the end of the text (serial number, author, name of journal, volume, first and last page, and year of publication).

This section does not provide an accelerated means of publication, but is designed to offer the opportunity to present in brief form noteworthy results of works in progress.

Proofs. Proofs will be sent to the author with a reprint order form. Authors will be charged for alterations in excess of 10% of the cost of composition.

Reprints. Fifty copies of each article are granted free of charge and authors may order additional quantities.